Claims

1. A catheter and guide wire exchange system comprising:

an elongate flexible catheter shaft having proximal and distal shafts and first and second lumens extending there through, the first lumen being open at the shaft distal end and being sized and shaped to slidably receive a guide wire;

a longitudinal guide way formed in the proximal shaft to enable transverse access to the first lumen through the proximal shaft, the guide way extending along a major portion of the length of the proximal shaft from a location adjacent a proximal end of the proximal shaft to a distal terminal end proximal of a distal end of the proximal shaft, thereby defining an uncut distal segment of the proximal shaft;

a stop located on the proximal shaft at the distal terminal end of the guideway;

a speed bump located on the proximal shaft proximal of the stop;

a balloon mounted about a distal segment of the distal shaft, the balloon being in fluid communication with the second lumen;

a guide member mounted on the proximal shaft and having a catheter passageway extending there through for slidably receiving the catheter shaft and a guide wire passageway for slidably receiving the guide wire for merging the guide wire and the catheter by guiding the guide wire transversely through the guide way and into the first lumen and for separating the guide wire and catheter by guiding the guide wire transversely out of the first lumen through said guide way; and

a transition segment between the proximal shaft and the distal shaft.

2. The catheter and guide wire exchange system of claim 1, wherein the guide member has at least one keel disposed within the catheter passageway and being adapted to open and to protrude through the guide way into the first lumen.

3. The catheter and guide wire exchange system of claim 1, wherein the guide wire passageway extends through a tubular member extending into the catheter passageway and being shaped and sized to fit within the first lumen.

4. The catheter and guide wire exchange system of claim 1, wherein the first lumen has a ramp adapted to receive and direct a guide wire proximal end through the guide wire passageway.

5. The catheter and guide wire exchange system of claim 1, wherein the first lumen has a recess adapted to receive and direct a guide wire proximal end through the guide wire passageway.

6. The catheter and guide wire exchange system of claim 1 wherein the proximal shaft contains a tri lumen arrangement of a side by side tubes defining a guide wire lumen and an inflation lumen and a stiffening wire lumen, the distal shaft contains a coaxial arrangement of an inner tube defining a guide wire lumen and an outer tube surrounding the inner tube thereby defining an inflation lumen, wherein the transition segment joins proximal and distal shafts intermediate the trilumen and coaxial arrangements.

7. The catheter and guide wire exchange system of claim 1 wherein the outer tube of the distal shaft overlaps the proximal shaft distal end and the inner tube of the distal shaft is inserted in the guide wire lumen of the proximal shaft to form the transition section.

8. The catheter and guide wire system of claim 7 wherein the inner tube includes a connecting tube for insertion into the inflation lumen of the proximal shaft.

9. The catheter and guide wire exchange system of claim 1 wherein the balloon is a stent delivery balloon.